REMARKS

I. Status of the Application

Pending claims 1-4, 8, and 11 and 12 stand rejected under 35 USC § 112, 2nd paragraph as being indefinite.

Pending claims 1-4, 8, and 11 and 12 stand rejected under 35 USC § 102(b) as being anticipated by USPN 6,007,775 to Yager (hereinafter Yager '775).

Pending claims 1-4, 8, and 11 and 12 stand rejected under 35 USC § 103(a) as being obvious in view of Yager '775.

Claims 1 and 8 are amended herewith, and new claims 14-31 are presented without the introduction of new matter.

Reconsideration of claims 1-4, 8, 11, 12 and 14-31 is respectfully requested in view of the foregoing amendments and following remarks.

II. Amendment to the Claims

Claims 1 and 8 are herewith amended to recite the feature:

> "depositing a reactive constituent in the finite volume diffusion channel at a stationary position between the first measurement probe and the second measurement probe"

This feature of the invention is disclosed in each of Figs. 8, 9b, 10a, 11a, 12, and their corresponding descriptions of the specification.

New claims 14-31 are added. New independent system claim 14 is presented in means-plus-function format corresponding to claim 1. Claims 15-23 are dependent from new claim 14 and recite particular refinements of that exemplary system. Dependent claim 15 recites that the finite volume diffusion channel includes a micro-fluidic channel as described in paragraphs [0122] and [0124]. Dependent claim 16 recites the feature that the microfluidic channel is formed within an integrated circuit, as described in paragraph [0122]. Dependent claim 17 recites the feature that the means for obtaining a differential measurement is an electrical means or an optical means, as described in paragraph [0117]. Dependent claim 18 recites the feature that the system is constructed as as a part of a micro-electromechanical (MEM) system or a microfluidic system, as described in paragraphs [0122], and [0125]. Dependent claim 19 recites the feature that the finite volume diffusion channel includes a cavity operable to retain the reactive constituent, as described in paragraphs [0126] and [0132]. Dependent claim 20 recites the feature that the reactive constituent includes beads, as described in paragraph [0126]. Dependent claim 21 recites the feature that the finite volume diffusion channel comprises a plurality of cavities for retaining a respective plurality of reactive constituents, as described in paragraph [0138]. Dependent claim 22 recites the feature that the finite volume diffusion channel is integrated with the means for obtaining a differential measurement, as described in paragraph [0140].

New independent system claim 23 is presented in means-plus-function form corresponding to method claim 8. Dependent claims 24-31 recite the features included in claims 15-22, and find support in the aforementioned paragraphs.

III. Rejections under 35 USC § 112, 2nd paragraph

Claims 1 and 8 stand rejected under 35 USC 112, 2nd paragraph as being indefinite. In particular, the wording “characterize” is objected to as being indefinite.

Applicant now amends claims 1 and 8 to further clarify this aspect of the invention. The term "characterize" was used to denote that the differential measurement obtained "corresponds to" the diffusion response occurring within the diffusion chamber under these measurement conditions. That is to say, the differential measurement is a measured response "corresponding to" the occurring diffusion response. The Examiner is correct that this differential measurement is compared with a baseline differential measurement, as recited subsequently in the claim, to determine presence or absence of bio/chemical activity (claim 1) or rate of bio/chemical activity (claim 8). In order to more clearly describe this, claims 1 and 8 have been amended to recite that the "obtained differential measurement corresponds to a diffusion response occurring between the bio/chemical species and the reactive constituent along the transport axis and between the first and second measurement probes." Applicant submits that this formulation of claims 1 and 8 complies with 35 USC 112, 2nd paragraph, and the present amendments are not necessitated by any teaching or disclosure of the cited references.

IV. Rejections under 35 USC §§ 102(b) and 103(a)

Claims 1, 8, 14, and 23 are each novel over Yager '775, at least in that Yager '775 does not disclose the feature of:

> "depositing a reactive constituent in the finite volume diffusion channel at a stationary position between the first measurement probe and the second measurement probe"

Yager '775 discloses a sensor utilizing diffusion occurring between layered laminar streams, rather than side by side streams. Within the sensor, a sample stream and a carrier stream flow in laminar layers one on top of the other, and one or more reagents are introduced to the bottom of the carrier stream through either a fluid or solid reagent inlet. The reagent contains reagent particles which, in the presence of the analyte, have

a detectable change in a property. The analyte diffuses into the carrier stream where it interacts with the reagent particles and is detected.

Yager '775, however, does not disclose an operation or structure in which a reactive constituent is deposited within the diffusion channel, as recited in claims 1, 8, 14 and 23. Applicant notes that Fig. 3 of Yager '775 discloses deposition of a solid reagent pellet 158 within cavity 58. The solid reagent pellet 158 however, is not deposited within the diffusion channel 20, nor is the pellet located between first and second measurement probes. Indeed, the operation of Yager '775 system depends on maintaining the laminar flow quality of the supplied streams (Yager '775, col. 11, lines 38-42). Depositing a reactive constituent within the flow channel 20 would create significant turbulence in the laminar streams flowing through the flow channel 20, and thus the skilled person would not have been motivated to modify the Yager '775 system to include such a feature.

Accordingly, as the cited art does not show the operation or structure in which a reactive constituent is deposited within the finite volume diffusion channel at a stationary position between the first measurement probe and the second measurement probe, claims 1, 8, 14 and 23 reciting this feature is novel thereover. Furthermore, because inclusion of this feature would compromise the operation of the Yager '775 system, the skilled person would have no motivation to modify the Yager system to include this missing feature. Thus, as the cited art neither discloses nor suggests the recited combination of features, including the operation of "depositing a reactive constituent in the finite volume diffusion channel at a stationary position between the first measurement probe and the second measurement probe," claims 1, 8, 14 and 23 reciting this feature is allowable thereover. Remaining claims 2-4 and 11-12, 15-22 and 24-31 are dependent from independent claims 1, 8, 14 and 23, respectively, and accordingly, each is allowable for at least the same reasons.

Conclusion

The Applicant submits that the presently pending claims 1-4, 8, 11, 12, and 14-31 are patentable over the prior art, and accordingly request the issuance of a Notice of Allowance in due course. Should the Examiner believe that an interview would expedite prosecution of the case, a telephone call to the Applicant's representative is invited.

Respectfully submitted,

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